

Remarks

The claim rejections must be reversed because the primary '702 reference is directed to multipath propagation, which is fundamentally different from the claimed single carrier modulation. As all rejections rely upon the '702 reference, which cannot correspond to the claimed invention as asserted, all rejections are improper. The following more particularly addresses these and other matters, in view of which Applicant believes the claims to be allowable over the cited references.

The instant Office Action dated July 30, 2008 indicated that the previous rejections have been withdrawn, and notes the following new rejections: claims 1-10 and 18-27 stand rejected under 35 U.S.C. § 103(a) over Berberidis *et al.* (US Patent No. 6,052,702) in view of Crespo (U.S. Patent No. 5,020,078); claims 11 and 28 stand rejected under 35 U.S.C. § 103(a) over Berberidis in view of Crespo, and further in view of Johnson *et al.* (U.S. Patent No. 5,808,574); claim 12 stands rejected under 35 U.S.C. § 103(a) over Berberidis in view of Crespo, and further in view of Gay-Bellile *et al.* (U.S. Patent Pub. 2002/0070796); and claim 17 stands rejected under 35 U.S.C. § 103(a) over Berberidis in view of Gay-Bellile and further in view of Thomas *et al.* (U.S. Patent Pub. 2004/0013084). Applicant respectfully traverses all claim rejections, and further does not acquiesce to any averment made in the Office Actions of record, unless Applicant explicitly states otherwise.

The claim rejections should be reversed because the primary '702 reference (upon which all rejections rely) is fundamentally unrelated to the claimed invention, which is directed to single carrier modulation. As described in its "Field of the Invention" and consistent with its entire specification, the '702 reference is directed specifically to "multipath propagation during the RF transmission of a digital signal." The '702 reference's approach involves using a multiplexer (*e.g.*, 12 in FIG. 4) to process and weight a multipath digital signal. As is consistent with the discussion of these disparate approaches at paragraph 0008 of the instant application, this multipath approach is inconsistent with and fails to correspond to the claimed single carrier modulation, and cannot operate to correspond to the same. This is also consistent with various technical treatises and other sources, as readily available in the art.

Regarding the independent claims (1 and 18, respectively directed to device and method limitations with similar impart), the cited '702 reference thus cannot correspond to

the claimed single carrier modulation and related “equalization means” that processes single carrier signals. The cited multiplexer 12 (*i.e.*, for processing/multiplexing a multi carrier signal) thus does not correspond to the claimed single-carrier “equalization means,” and the ‘702 reference therefore does not disclose claim limitations including “a feed forward equalization means for performing a feed forward equalization by multiplying each of the components of said second vector of signals with equalization parameters.”

In addition, the cited “multiplexer 12” multiplies the multipath carrier blocks by “2M weighting coefficients,” which do not correspond to the claimed equalization means and its multiplication of a single carrier signal by equalization parameters. For example, as consistent with the discussion at paragraph 0036 of the instant invention and with various claim limitations (*see, e.g.*, claim 3), equalization parameters used for single carrier modulation can be “generated by taking into account a fast Fourier transformation estimation of a channel impulse response of the (single carrier) signal processed.” The cited weighting coefficients in the ‘702 reference do not contemplate such equalization in weighting the symbols, instead involving multipath signal processing and using “variants of the (multipath) transmission channel” as discussed at column 7:56-58. Moreover, calculation of the ‘702 reference’s weighting coefficients “requires a large number of operations” due to this multipath approach, and thus “is done most of the time on a deferred time basis by a digital signal processor (DSP) type of computation device” as discussed at column 7:60-63.

In addition to the above-discussed lack of correspondence as provided in the ‘702 reference, Applicant submits that the secondary ‘078 reference fails to disclose all of the limitations as asserted. For instance, the alleged “adding means” 22 is in fact a subtracter circuit that subtracts estimated distortion samples from input symbols (*see, e.g.*, column 3:59-4:2), and thus fails to teach or suggest limitations directed to “adding the output signal of said feedback filter means to the output signal of said first section.”

Specifically regarding the rejection of claims 2 and 19, the Office Action’s citation to the ‘702 reference’s approach to minimize intersymbol interference does not disclose, teach or suggest minimizing the signal-to-noise ratio as claimed. The Office Action appears to have equated intersymbol interference with noise, without providing any explanation for the same. Applicant has reviewed the cited references and, as

consistent with technical resources, intersymbol interference and noise may be related but are not one and the same.

Specifically regarding the rejection of claims 3 and 20, the Office Action's citation to portions of the '078 reference, which simply mention channel impulse, do not disclose, teach or suggest the claimed equalization means and its functions relating to using a "fast Fourier transformation estimation of a channel impulse response" to generate equalization parameters. The '078 reference's discussion of impulse do not mention and do not appear to bear any relationship to fast Fourier transformation estimation of such an impulse, and further do not discuss generating equalization parameters in accordance with the same. Moreover, the Office Action has failed to provide any motivation whatsoever for combining the cited teachings as asserted in rejecting claims 3 and 20 (see pages 4 and 5 of the Office Action, which address claims 3 and 20).

Regarding the rejection of claims 4 and 21, the indicated "M/PL element" acts after the forward filter FF and thus does not disclose converting a sequence of incoming signals for a first vector as claimed (*e.g.*, the first vector is provided for fast Fourier transform as in claim 1). Correspondingly, the rejections of claims 4 and 21 as well as claims 5-8 and 22-25, which depend from either claim 4 or 21, are improper.

Regarding the Section 103 rejection of claims 11 and 28, the Office Action has not asserted that either reference teaches providing an output signal built by consecutive blocks, where each block includes "a predetermined number (M) of samples from" an output signal. In addition, while the secondary '574 reference describes a pseudo-random noise generator, it does not disclose including a pseudo noise sequence with blocks of an output signal as claimed. This is consistent with Applicant's previous response, which has not been addressed in the instant Office Action.

Regarding the various other dependent claims, Applicant accordingly believes that the asserted multipath signal teachings in the primary '702 reference cannot correspond to the claimed invention.

In addition to the above, Applicant believes that there is no motivation for modifying the primary '702 reference as asserted to arrive at a single carrier approach because the reference is directed specifically to a multipath approach, and uses

processing devices (multiplexer 12) and characteristics for multipath processing that are wholly unrelated to the claimed invention. Moreover, the secondary '078 reference appears to be directed to "a noisy, narrow band channel such as a telephone subscriber loop" (see the Technical Field), whereas the primary '702 reference is directed to "multipath propagation of a digital signal." In this context, Applicant believes that the alleged motivation is misplaced.

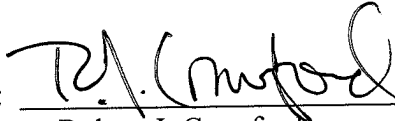
New claim 33 includes limitations similar to those of independent claim 1 as well as dependent claims 2 and 3, and is believed to be allowable over the cited references for reasons including those stated above. For example, the cited references fail to disclose, teach or suggest limitations directed to a feed forward equalizer to perform a feed forward equalization on a single carrier signal, by generating equalization parameters using a fast Fourier transformation estimation of a channel impulse response of an output single carrier signal. The cited references also fail to disclose, teach or suggest further multiplying each of the components of a second vector of signals with the generated equalization parameters to reduce the signal-noise ratio of the signals. Support for these limitations may be found, for example, in the claims, figures and specification, with specific examples at paragraphs 0060-0072.

In view of the remarks above, Applicant believes that each of the rejections has been overcome and the application is in condition for allowance. Should there be any remaining issues that could be readily addressed over the telephone, the Examiner is asked to contact the agent overseeing the application file, Peter Zawilski, of NXP Corporation at (408) 474-9063.

Please direct all correspondence to:

Corporate Patent Counsel
NXP Intellectual Property & Standards
1109 McKay Drive; Mail Stop SJ41
San Jose, CA 95131

CUSTOMER NO. 65913

By: 
Name: Robert J. Crawford
Reg. No.: 32,122
Eric J. Curtin
Reg. No. 47,511
(NXPS.456PA)